

**NOFORN**

26 MAR 1958

MEMORANDUM FOR: [REDACTED]

SUBJECT: Solidified Gasoline

REFERENCE: [REDACTED] same  
subject, 26 February 1958

1. Enclosed is a summary on solidified gasoline requested by [REDACTED] Chief of Scientific Operations. The summary has been prepared so that it can be passed to a liaison service as noted in the referenced memorandum. Other available information pertinent to this inquiry is presented in the following paragraphs.

2. Reference is made to "the process for reconverting solidified gasoline to its liquid state" mentioned in paragraph 1 of referenced memorandum. Responsible sources in US Department of Defense advise that there is no known practical method for reconverting the gasoline from the solid to liquid state except by mechanical means, such as the use of a press. No other method of reconversion was suggested or developed during the period of the JS study.

3. We know of no patent relating to "the process of transporting solid gasoline." However, the US Patent Office has record of confirmatory licenses covering 15 US patents and patent applications and 17 Foreign patents and patent applications, all of which are understood to relate to the solidifying process itself. We suggest, therefore, that the word "transporting" may, in fact, refer to "transforming". Furthermore, we have no information regarding a patent or license made available to a financial firm with headquarters in Panama.

4. The following information is provided in response to the other requests listed in paragraph 2 of referenced memorandum. Except as indicated, the information is related to the subject of solidified gasoline.

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(petroleum) and not to the problem of reconverting from solid to liquid by other than mechanical means.

a. Importance of this process. The reasons given for termination of research on the solidified gasoline project included but were not limited to the problems allied with the reconversion process. In view of the fact that the solidified gasoline, per se, did not produce the desired advantages, it is unlikely that any simple, non-mechanical method of reconversion would in itself lead to the adoption of solidified gasoline on a large scale. Because of the high percentage of water and non-combustibles in solidified gasoline, its use as a solid propellant for guided missiles has been discounted. Responsible sources in the US government do not consider the process to be important to the US; nor are the importance or advantages to the USSR apparent.

b. Damages to the US should the Soviet obtain the information he seeks. The Soviet apparently seeks information related to a non-mechanical method of reconverting the solidified gasoline to its liquid state. The obstacles allied with reconversion of solidified gasoline to the liquid state were only part of the objections to the use of solidified gasoline. On this basis, responsible representatives of the US Department of Defense advise that the US would probably not be interested in the solidified gasoline process even though a non-mechanical reconversion method was developed. These same representatives could foresee no damage to the US should such a reconversion process become known to the Soviet.

5. The Director of Research for Office of the Quartermaster General (OCMG), Dr. R. G. H. Qui, described the developers of the solidified gasoline process as persistent and persevering opportunists who are probably still trying to stimulate interest in their process and who might be motivated by either financial or political gain. This information is provided for guidance in determining whether the report of the recent interest by the Soviet may, in fact, be designed to revive interest on the part of the US.

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7. Most of the source material for this memorandum is in custody of the COMG. An examination of the files suggests that the U. government experience related to the solidified gasoline project was very satisfactory.

8. We hope the above information will be helpful to you in clarifying this subject.

FOR THE ASSISTANT DIRECTOR, RESEARCH AND REPORTS :

  
Acting Chief, Control Staff  
Office of Research and Reports

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### Solidified Gasoline

A French chemist, Pathus-Labour, developed a process by which gasoline (or other petroleum distillates) could be prepared in solid form by solidifying an emulsion of alginates (seaweed derivative), water, calcium chloride, and gasoline. An Italian later developed the "Fuardo" process which was similar but inferior to the "Labour" process. A West German periodical of 29 July 1957 reported that the Soviet Academy of Science had developed a method for producing solidified gasoline. In each of the processes mentioned above, the gasoline was reconverted from the solid to liquid state by mechanical means. The Labour and Fuardo solids were crushed in a wringer-like press and the liquid gasoline was collected. The Soviets reported recovery of the gasoline through the use of a "regenerator press".

In 1947, the US military establishment negotiated a contract with Pathus-Labour and his associates to produce solid gasoline in the US for study as a possible military supply item. The research on the subject of solidified gasoline was intended to determine, inter alia, whether the advantage of decreased flammability, non-explosiveness, and ease of handling and storage decidedly overbalanced the disadvantages of approximately 25% additional shipping weight and the additional processes of manufacturing congealed product and subsequent recovery of gasoline for use.

Research disclosed that the process was not militarily practical because of lack of stability in storage, hazards involved in reconversion to liquid, and problems involved in developing a practical reconversion apparatus for field use. As a result the project was terminated in early 1948. No interest in solidified gasoline has been manifest by the US military establishment since 1948. The action to terminate the project followed an analysis of the study by a committee composed of representatives of the US petroleum industry, Columbia University, and the National Research Council. It may be inferred, therefore, that US industry is also indifferent to the process.

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FEB 26 1958

MEMORANDUM FOR: Assistant Director, ORR

SUBJECT: Solidified Gasoline

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1.

[REDACTED] a Soviet commercial mission representative in France has been attempting to obtain information on the process for reconverting solidified gasoline to its liquid state. The actual report states that:

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2. The paragraph above constitutes the extent of our information on this matter. It is requested that ORR, in coordination with appropriate elements of the Defense Department, furnish this office with a statement of the importance of this process; the damage, if any, to the U. S. should the Soviet obtain the information he seeks; and a summary of the present status of solidified gasoline as an industrial and military item. This summary should be such as may be passed to [REDACTED]

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3. Your assistance in clarifying this matter will be greatly appreciated.

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MEMORANDUM FOR: Chief, Scientific Operations Division, [REDACTED]

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SUBJECT : Solidified Gasoline

REFERENCE : [REDACTED] subject as above, 26 February 1958

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1. A French chemist - Pathus-Labour - developed a process by which gasoline (or other petroleum distillates) could be prepared in solid form by solidifying an emulsion of alginate (seaweed derivative), water, calcium chloride, and gasoline. An Italian later developed the "Fuardo" process which was similar but inferior to the "Labour" process. A West German periodical of 29 July 1957 reported that the Soviet Academy of Science had developed a method for producing solidified gasoline. In each of the processes mentioned above, the gasoline was reconverted from the solid to liquid state by mechanical means. The Labour and Fuardo solids were crushed in a wringer-like press and the liquid gasoline was collected. The Soviets reported recovery of the gasoline through the use of a "regenerator press".

2. In 1947, the US military establishment negotiated a contract with Pathus-Labour and his associates (see also below) to produce solid gasoline in the US for study as a possible military supply item. The Office of the Quartermaster General (QMAG) was the US contracting service involved. Two US commercial companies - The Carame Corp., and the Glenn L. Martin Co. participated in the contract.

3. The research was intended to determine, inter alia, whether the advantage of decreased flammability, non-explosiveness, and ease of handling and storage decidedly overbalanced the disadvantages of approximately 25% additional shipping weight and the additional processes of manufacturing congealed product and subsequent recovery of gasoline for use. The results of the US study were disappointing and were described by General G. A. Horkan, QMAG, in a letter (November 1951) to General Labarriere of the French Ministry of Defense.

"....however, subsequent developments indicated that the process was not militarily practical because of lack of stability in storage, hazards involved in reconversion to liquid, and problems involved in developing a practical reconversion apparatus for field use. [that....would produce in quantity] As a result the project was terminated in early 1948 and Pathus-Labour returned to France. No renewal of the project is contemplated."

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SUBJECT: Solidified Gasoline

4. The background information described above is provided to supplement such related data as your office may possess and to establish a basis for answering the questions posed in the referenced memorandum.

5. Responsible sources in the US Department of Defense advise that there is no known practical method for reconverting the gasoline from the solid to liquid state except by mechanical means, such as the use of a press. No other method of reconversion was suggested or developed during the period of the US study.

6. The reference in paragraph 1b of your memorandum to "...the patent for the process of transporting solid gasoline" is not understood. There is no known patent related to the transportation, per se, of solidified gasoline. However, the US Patent Office has record of confirmatory licenses covering 18 US patents and patent applications and 17 Foreign patents and patent applications, all of which are understood to relate to the solidifying process itself. It is suggested, therefore, that the word "transportation" may, in fact, refer to "transformation".

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 There is no information as to the patent or license made available to a financial firm with headquarters in Panama.

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8. The following information is provided in response to the particular questions posed in paragraph 2 of your memorandum. Except as indicated, the information is related to the subject of solidified gasoline (petroleum) and not to the problem of reconverting from solid to liquid by other than mechanical means.

a. Importance of this process. The reasons given for termination of research on the solidified gasoline project included but were not limited to the problems allied with the reconversion process. In view of the fact that the solidified gasoline, per se, did not produce the desired advantages, it is unlikely that any simple, non-mechanical method of reconversion would provide the necessary overbalance. Because of the high percentage of water and non-combustibles in solidified gasoline, its use as a solid propellant for guided missiles has been discounted. Responsible sources in the US government do not consider the process to be important to the US; nor are the importance or advantages to the USSR apparent.

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SUBJECT: Solidified Gasoline

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b. Damages to the US should the Soviet obtain the information he seeks. (Presumably a non-mechanical method of converting from solid to liquid gasoline). On the basis of the complete indifference of US Defense Department to the use and application of solidified gasoline, it is considered that no damage would be done to the US. The obstacles allied with conversion from solid to liquid gasoline appear to be only part of the objections to the use of solidified gasoline. (see also below).

c. Present status of solidified gasoline as an industrial and military item. As indicated above, no interest in solidified gasoline has been manifest by the US military since 1948 when the original project in the US was abandoned. The action to terminate the project followed an analysis of the study by a committee composed of representatives of the US petroleum industry, Columbia University, and the National Research Council. It may be inferred, therefore, that US industry is also indifferent to the process. In November 1951,

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[REDACTED] in reference to the present status of solidified gasoline, the Director of Research and Development for OQMG (Lt. R. G. H. Sui) described the developers of the solidified gasoline process as persistent and persevering opportunists who are probably still trying to stimulate interest in their process and who might be motivated by either financial or political gain. This element is provided for guidance in determining whether the report of the recent interest by the Soviet may, in fact, be designed to revive interest on the part of the US.

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SUBJECT: Solidified Gasoline

10. Most of the source material for this memorandum is in custody of the OQMG. The files suggest that the US government experience related to the solidified gasoline project was very unsatisfactory.

11. We hope the above information will be helpful to you in clarifying this subject.

OTTO E. GUTHE  
Assistant Director  
Research and Reports

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